

# Quad Black

## Printing Guide - Epson/ Photoshop

This document covers the preparation of image files in Photoshop for use with the Quad Black printing system.

Traditionally, users who have wanted to print in black and white have been forced to use either the black channel alone or create a file that prints black and white using equal amounts of colour. The first method produces a very coarse print with a low tonal range. The second method is virtually impossible as the colour inks produce different colour casts in the black and white spectrum.

The new **Quad Black** ink set uses four different dilutions of black ink to achieve a wide tonal range and “lock in” the colour. It is available in three different “shades”, Warm (*similar to Sepia*), Neutral, and Cool (*blue-black*).

Before using Quad Black for the first time, follow the cleaning procedure detailed below, then replace the cleaning cartridges with the Quad Black cartridge set.

1. Turn printer on.

2. Remove all the cartridges from the machine.

3. Turn printer off.

*The printer purges all the remaining ink from the system. This process takes around 1 minute.*

4. Insert a set of cleaning cartridges. These cartridges are filled with a clear cleaning solution that will remove any traces of ink in the system and clean the print head.

5. Turn the printer on.

*The printer primes itself with cleaning fluid. This process takes around 8 minutes.)*

6. Load the printer with paper.

Go to the “UTILITIES” section of the print driver on your computer.

Select “NOZZLE CHECK” .

*The printer prints a pattern of lines. These lines should be quite faint as they have been printed with cleaning fluid.*

7. Select “CLEAN” and then “CONFIRM”

*The printer prints another nozzle check pattern. The cleaning fluid has now run through the printer and the machine is ready for a new ink set.*

8. Repeat steps 2 - 5, replacing the cleaning cartridges with the new ink set.

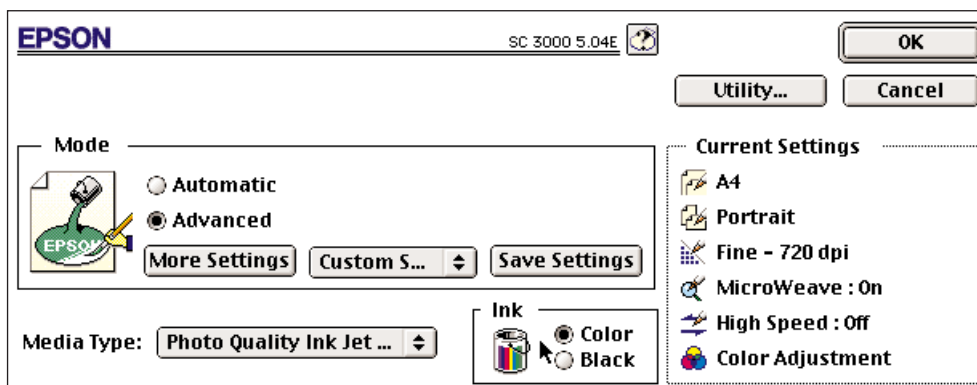
9. Go to the “UTILITIES” section of the print driver on your computer.

Select “NOZZLE CHECK”

*The printer prints a pattern of lines with the new ink.*

If there are any breaks in the line select “CLEAN” and then “CONFIRM” to reprint the test pattern. When the lines are unbroken you are ready to print.

If your image is in black and white to start with it can be printed immediately in Quad Black by selecting “Color” in the Epson print driver, activating all the colour channels:



The results can vary greatly however. A file may be black and white but exist in RGB or CMYK in Photoshop. Alternatively the user may have a full colour image that needs to be reproduced in black and white and so the file needs converting. All these factors will affect the printed output. **For the best results follow these steps when preparing a file.**

## SCANNING

If your scanning software gives you the option, always scan in greyscale. This captures a greater black and white tonal range than scanning in colour. A colour scan can then be done separately and kept as back up should you need a colour reproduction in the future.

## PHOTOSHOP

The next step is to make a CMYK separation of your file. When this is done using the following settings it performs two functions.

Firstly it delays the point on the greyscale where the black (Full strength) channel begins to print. Even in small quantities, full strength black is sometimes printed in the light areas of the image to reproduce neutral highlights. In these areas the dots are highly visible. A CMYK separation instructs the printer to use the black channel only in the mid tones and shadows. Only the dilute channels are used for the highlights, creating a “continuous tone” effect.

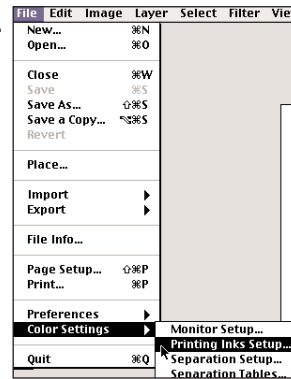
Secondly it places an “ink limit” on the dilute channels. When different dilutions of black are all combined together at high densities, details in shadow areas are lost. When an ink limit is in place on the dilute channels, the printer is instructed to use no more than a certain amount of dilute ink no matter how dark the image. The constitution of the deep blacks and shadow detail is mostly made up by the full strength black channel. Small changes in data in these shadow areas are thus more visible.

The Separation Setup section in Photoshop tells the program how to make up a CMYK file from the RGB or Greyscale original.

**The settings on the next page are designed for the Quad Black system only. Return to the original settings when preparing colour CMYK files.**

# PHOTOSHOP 3/ 4

1. Go to File - Color Settings - Printing Inks Setup...



2. Enter the following settings.

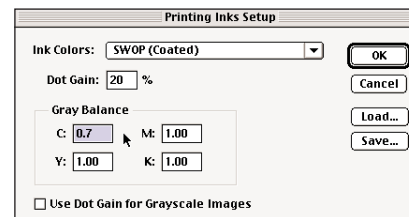
Ink Colors: SWOP (Coated)

Dot Gain: 20%

Grey Balance:

C: **0.7** M: **1.0** Y:**1.0** B:**1.0**

Click OK



3. Go to File - Color Settings - Separation Setup..

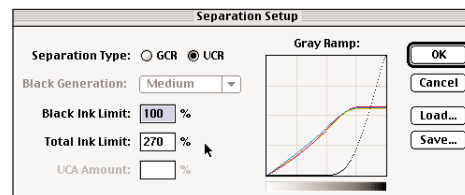
4. Enter the following settings.

Separation type: UCR

Black Ink Limit: 100%

Total Ink Limit: 270%

Click OK



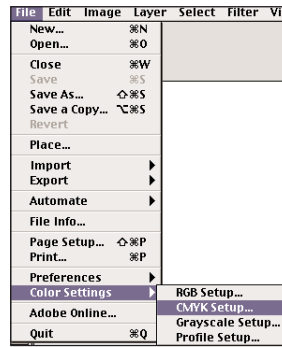
The graphic representation in the Separation setup box shows how the adjustment to the grey balance has brought the cyan levels in line with the yellow and magenta. It also shows how the black channel entry point is delayed and how the CMY levels are limited, shadow areas being taken care of by the black channel.

These settings can be saved for easy recall later.

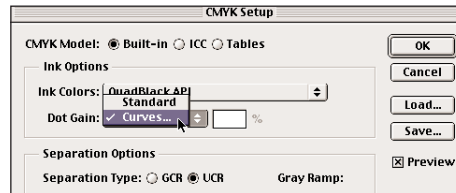
Photoshop 5 Setup instructions follow on the next page.

# PHOTOSHOP 5x

1. Go to File - Color Settings - CMYK Setup...



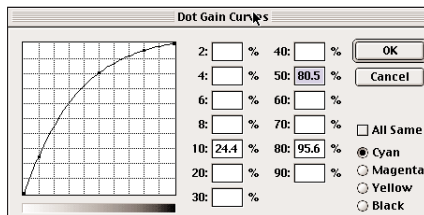
2. Next to Dot Gain: Click on "Curves"



3. Enter the following settings:

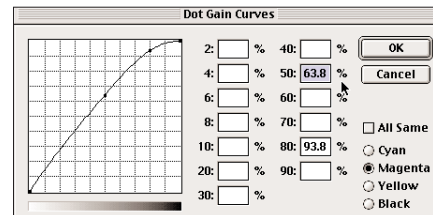
Cyan

10: 24.4  
50: 80.5  
80: 95.6



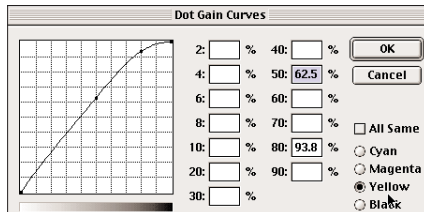
Magenta

50: 63.8  
80: 93.8



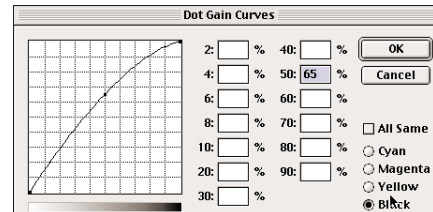
Yellow

50: 62.5  
80: 93.8



Black

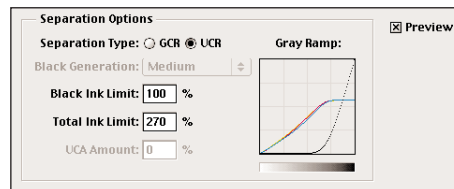
50: 65



4. Click OK

5. Enter these settings:

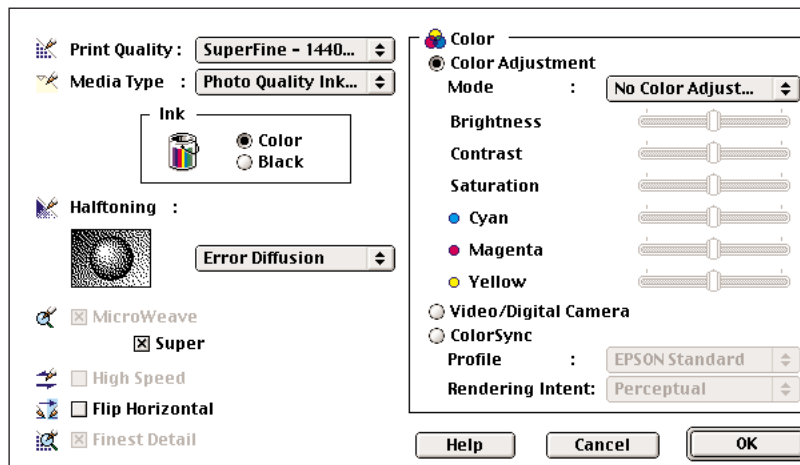
Separation type: UCR  
Black Ink Limit: 100%  
Total Ink Limit: 270%  
Click OK



These settings can be saved for easy recall later.

## Preparing Your Image

1. If your image is a full colour image, go to Image - Adjust - Desaturate  
This equalises the Cyan, Magenta and Yellow levels in the image, producing a monotone image.
2. If your image is in CMYK, convert to Lab mode (Mode - Lab)  
If your image is in RGB or Greyscale go to step 3.
3. You should now have a monotone image in a mode other than CMYK, ie, Greyscale, RGB or Lab mode. Make any adjustments necessary to the image using the colour correction tools.
4. Convert the image to CMYK.
5. Make any final adjustments necessary to the image and save.
6. Print using these settings.



## General Notes

1. The settings in the the CMYK dialogue boxes only affect the data in the image when the image is converted from another colour mode into CMYK.
2. Images created previously and saved in CMYK are unaffected by these changes and can be opened and manipulated as normal. To prepare them for Quad Black printing, convert to Lab and back into CMYK as described above.
3. The settings on the next page are designed for the Quad Black system only. Return to the original settings when preparing colour CMYK files.
4. Ensure the printer has been cleaned with cleaning fluid before using the Quad Black system. ( See page 1).  
Be sure to clean the printer with cleaning fluid when converting back to a colour ink set.
5. If possible, dedicate a machine to Quad Black printing and another to colour printing. Frequent ink changeovers can saturate the absorbant sponge inside the printer and leaking may occur. The number of changeovers that can be performed before this occurs varies depending on conditions. Sponge replacement is covered under the standard Epson warranty.